MultiModemManager
Model CC4800 Card Cage

Hardware Manual

MultiTech Systems

Owner's Manual

P/N 82024202, Rev. C

CC4800, CC4800/11, CC4800/21, and CC4800 48 volt Card Cage

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Record of Revisions

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B (03/07/94)	Manual restructured. Additional safety material included.
C (11/02/94)	CC4800 48 Volt material added.

TRADEMARKS

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Important Safety Requirements

1. No manual adjustments to the equipment are necessary for connection to mains power within rated voltage and frequency.
2. The power supply cord (or input screw terminals if a CC4800 48 Volt Card Cage) is intended to serve as the disconnect device. The socket-outlet must be installed near the equipment and be easily accessible.
3. To reduce the risk of shock, all openings should be covered during normal operation of the equipment.

1. Aucun réglage manuel de l'équipement n'est nécessaire pour des connexions à l'alimentation principale sous une tension et une fréquence nominales.
2. Le cordon d'alimentation a été conçu pour servir de dispositif de déconnexion. La prise d'alimentation doit être installée près de l'équipement et doit être facile d'accès.
3. Afin de réduire les risques de choc, toutes les ouvertures doivent être couvertes pendant le fonctionnement normal de l'équipement.

1. No son necesarios ajustes manuales del equipo para la conexión a la corriente de la red dentro del voltaje y frecuencia establecidas.
2. El conector de alimentación de energía sirve como dispositivo de desconexión. La toma de corriente se debe instalar cerca del equipo y tener un acceso sencillo.
3. Para reducir el riesgo de sacudida eléctrica, todas las aberturas deben estar cubiertas durante el manejo normal del equipo.

1. Bei Anschluß am Versorgungsnetz innerhalb der Nennleistung und -frequenz ist es nicht erforderlich, dieses Gerät manuell nachzustellen.
2. Die Netzschnur dient als Trennvorrichtung. Die Steckdose muß in der Nähe des Geräts installiert werden, um leicht zugänglich zu sein.
3. Um Elektroschockgefahr zu vermindern, müssen beim normalen Betrieb des Geräts alle Öffnungen abgedeckt sein.

Power Requirements

For CC 4800 48 Volt Card Cage:

DC, 42-54V, 7A.

CAUTION: For continued protection against risk of fire, replace with same type and rating of fuse. The fuse size is T7.0A, 250 V.

For CC4800, CC4800/11, and CC4800/21:

AC 100-240V, 50/60 Hz, 5-2.5 A

CAUTION: For continued protection against risk of fire, replace with same type and rating of fuse. Safety requirements are not fulfilled unless the equipment is connected to a wall outlet socket that is provided with an earth contact.

230V T.2.5A, 250V

115V T.5.0A, 250V

Alimentation Requise

C.A. 100-240 V, 50/60 Hz, 5-2,5A

ATTENTION: Pour garantir une protection continue contre tout risque d'incendie, utilisez toujours des fusibles de même type et de même intensité.

Les conditions de sécurité ne sont pas remplies si votre équipement n'est pas branché sur une prise murale avec mise à la terre.

230 V T 2,5 A, 250 V

115 V T 5,0 A, 250 V

Requisitos de potencia

C.A. 100-240 V, 50/60 Hz, 5-2,5 Amp

ATTENCION: Para garantizar la protección continua frente al peligro de incendio, sustitúyase con un fusible del mismo tipo e iguales especificaciones de funcionamiento.

Adviertase que los requisitos respecto a medidas de seguridad no quedan satisfechos a menos que este equipo eléctrico esté conectado a una toma de corriente mural conectada a tierra.

230 V T 2,5 Amp, 250 V

115 V T 5,0 Amp, 250 V

Stromaufnahme

AC 100-240V, 50/60 Hz, 5-2,5A

VORSICHT: Als Vorkehrung gegen Brandgefahr immer nur Sicherungen der gleichen Art und mit gleichem Nennwert verwenden.

Die Sicherheitsvorschriften sind nur erfüllt, wenn das Gerät an eine geerdete Wandsteckdose angeschlossen ist.

230 V, T2,5A, 250V

115V T5,0A, 250V

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

WARNING: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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Chapter 1
Introduction & Description

1.1
Introduction

The ***CC4800 card cage*** is the housing for the MultiModemManager, Multi-Tech Systems' high-density modem management system. The modem rack may contain one rack controller module, two power supply modules (one is required, and two are recommended), and 48 modems (16 modem cards, with three modems per card). You may connect phone lines to the rack by using either RJ11, or optional RJ21 connectors.

You may control up to 254 MultiModemManager racks from a single PC running the MultiModemManager software, which operates under Windows™ 3.1.

Model CC4800/11 consists of a card cage with a backplane of 48 RJ11 (6-pin modular) phone connectors, and one PS4800 power supply. It supports dial-up lines.

Model CC4800/21 consists of a card cage with a backplane of 6 RJ21 (50-pin amphenol) phone connectors, and one PS4800 power supply. It supports dial-up lines, and 2-wire and 4-wire leased lines.

1.2
Description of Card Cage and Possible Associated Components

- 19" wide x 12.1" high x 18.25" deep EIA rack;
- 16 modem card slots per card rack;
- three high-speed modems per card;
- up to 48 modems (DB25S female RS232C/D interface) per rack;
- up to 254 racks connected together via the MultiManager Link;
- up to 12,192 modems networked together and controlled from one central PC;
- 3 DB25S female RS232C/D connectors (A/B/C) per modem card for host connection;
- standard phone line interface has 16 male DB25 phone line connectors;
- weight: 27.5 lbs. (12.3 kg).

1.3
Special Considerations for CC4800 48 Volt Card Cages

The power supply input screw terminals, located on the bottom right portion of the back of the card cage, are intended to serve as the disconnect device.

The power requirement is DC, 42-54V, 7A. For continued protection against risk of fire, replace with same type and rating of fuse. The fuse size is T7.0A, 250V.

The rack back panel on your CC4800 48 Volt Card Cage does not appear as illustrated in Chapter Two of this manual. Instead of an AC Power outlet and fuse on the bottom right of the cage, you will find a 3-terminal power input strip and an hexagonal-shaped fuse holder. The power input strip is labelled, from left to right, negative (-), positive (+) and earth ground:

1.4
General Installation Considerations

This equipment should only be installed by properly qualified service personnel.

You may be installing components into a CC4800 card cage for the first time, or you may be re-installing or replacing components. Please observe the following:

- unpack hardware carefully.
- perform a visual inspection of the hardware. If you are concerned about the condition of your rack, call Technical Support.
- make sure that the flat ribbon cable on the back of your card cage is properly seated.
- for a first-time installation, install your power supplies, then power-up the rack to make sure the supplies work, then power the unit down before installing the other components.
- consult the manuals for your other component(s) (Power Supply, Rack Controller, and Modem Cards) to customize your settings before you install it (them) into the Card Cage. If you are installing more than one rack, you will need to change the Node ID of the additional controller(s). You will need to see the Controller manual for full instructions.

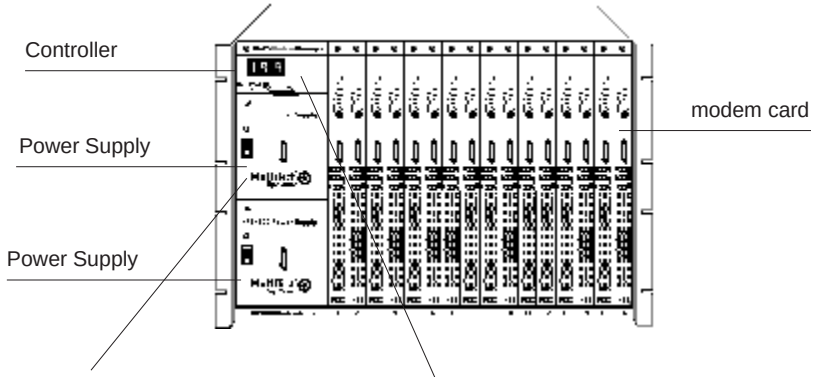
- only connect like circuits. In other words, connect SELV (Secondary Extra Low Voltage) circuits to SELV circuits and TN (Telecommunications Network) circuits to TN circuits.

Chapter 2
Installation

2.1
Introduction

This chapter tells you how to install the power supplies, the rack controller card, and modem cards into your **Multi**Modem**Manager** Card Cage. The cage itself may be installed in an industry-standard 19-inch wide rack cabinet, or placed on a secure tabletop. Figure 2-1, below, displays the front of a fully loaded rack with one controller card, two power supplies, and a full complement of 16 modem cards.

Figure 2.1 A Fully-loaded CC4800 Card Cage with two power supplies, MR4800 Controller, and sixteen modem cards.



The rack can work with one or two PS4800 power supplies. A second recommended power supply provides the system with a "redundant" function. If any of the three outputs on either supply fails, or is low, the other supply takes over, producing all of the power required to run the system, without any switchover period. (This is assuming that both power supplies are powered on; with both powered on and operational, they share the load.)

This module contains the processor and memory for intelligent operation of the rack. The back panel contains an RJ11 connection for Network UTP attachment to another rack, to an Active Hub, or to a manager node. The front panel provides 16 two-color LEDs for rack controller card status, and a 3-digit 7-segment display for cage number/node ID display. A 3-position connector on the back panel is available for attaching one of several warning alarm systems (such as audio, video or DTR dialer systems).

The next sections of this chapter give step-by-step installation procedures and detailed information about the back panel of the **Multi**Modem**Manager** Card Cage.

2.2
Hardware Installation Procedure

WARNING: When the modem rack is connected to the phone lines, it is possible for hazardous voltages to be present within the modem rack. To avoid injury, all modems should be installed in the rack, and any card slot that does not have a modem in it should be fitted with a blank panel prior to making any connections from the rack to the phone lines. All openings on the front of the modem rack, including the sixteen modem slots, the controller card slot, and the two power supply slots should remain covered by either a blank panel or the appropriate module at all times, unless the connections to the phone lines are removed.

1. Place the rack in a standard 19-inch wide rack cabinet and secure (refer to the rack cabinet manual); or set it on a secure tabletop.
2. Loosen rack front panel access screws.
3. Install the power supply module(s) in proper location(s), by aligning the power supply flanges in the card guides. A positioning pin will align the connectors at the back interior of the rack. Press firmly to mate the connectors. Secure with provided screw.
4. Install blank panels where needed to cover any unused power supply, controller card, or modem card slots.
5. Connect the cables at the rack back panel (refer to Figure 2-2, 2-3 or 2-4).
6. Install the rack controller card in proper location by aligning the printed circuit board in the card guides. Press firmly to mate connector and secure. For full information on configuring the controller, see your Rack Controller manual.
7. Turn rack Power Switch On (|). A self-test is performed to confirm front panel operation. If a controller card is installed, you will observe the following:
   - the seven segment display shows all 8s;
   - the green LEDs light, then go out;
   - the red LEDs light, then go out;
   - and the rack Node ID is finally displayed.
8. Power down the modem rack.

9. Determine the modem slot(s) to be used and remove front panel slot(s) if necessary. Insert the MultiModem cards. Align modem module in card guides and press firmly to mate the connectors.

10. Power on the rack.

2.3
Back Panel

The back panel of the **Multi**Modem**Manager** provides the system and power connectors for the installation of the rack hardware, as shown below.

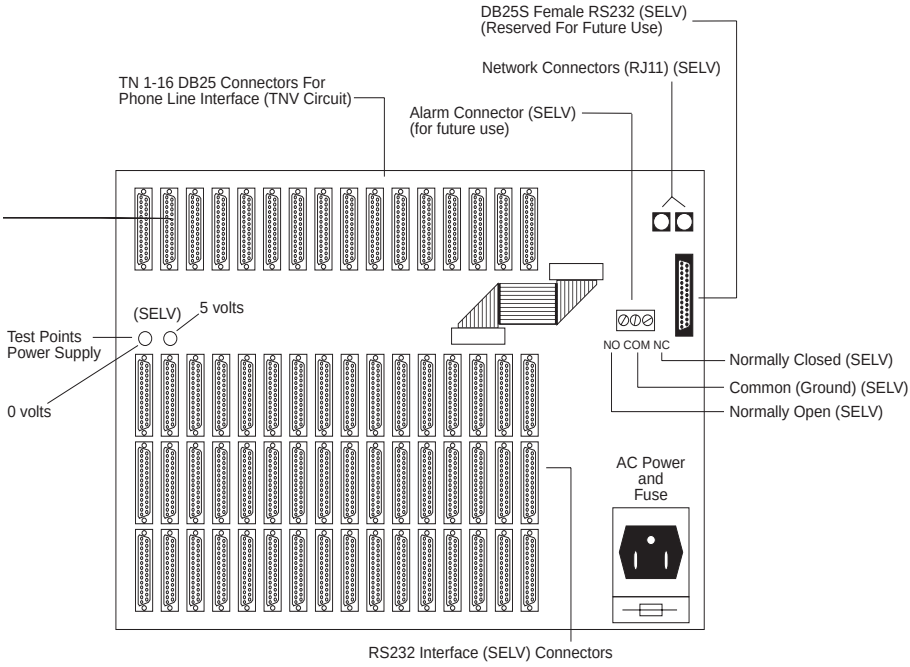


Figure 2-2. MultiModemManager Back Panel

The basic back panel includes a phone line cable; refer to Chapter 3 for cable pin assignments. Note that the basic back panel is shown in Figure 2-2. The optional RJ21 version of the back panel is shown in Figure 2-4; the optional RJ11 version is shown in Figure 2-5.

Note: The CC4800 48 Volt Card Cage does not appear as illustrated. You will find a 3-terminal power input strip and hexagonal-shaped fuse holder instead of an AC Power outlet and fuse on the bottom right of the cage.

2.4
Cabling

The rack back panel provides the connections for rack operation in the system. These connectors include:

- 16-DB25P male Phone Line Connectors (standard),
- 48-RJ11 female Phone Line Connectors (option), or

  6-RJ21 female Phone Line Connectors (option),
- 2-RJ11 (four-pin) female network connectors,
- 48-RS232C/D female modem connectors, and
- 1-female 3-prong Power cord connector; or if a 48 Volt CC4800 one 3-terminal power input strip.

Refer to the appropriate Network interface card (NIC), PC, or modem manual for cable specs.

MultiModemManager Link

The back panel contains two female RJ11 connections for installation in a multiple-rack configuration (maximum of 254 racks) via UTP wire. The control PC must be node - 255 (FF hex).

CAUTION: Whenever the **Multi**Modem**Manager** is connected in a multi-rack installation, the last rack must have a terminating plug (one shipped already installed on each rack in the left RJ11 connector). If the PC-to-rack connection goes down (cable failure, inadvertent disconnection) the Rack Controller Card can store a limited set of records until the connection is restored.

2.5
RJ21 Phone Line Interface Option

The back panel shown below illustrates the RJ21 version of the Phone Line Interface Board (Model - CC4800-21). The RJ21 board attaches to the standard DB25 back panel connectors (refer to section 2.2) for leased line or dial-up applications.

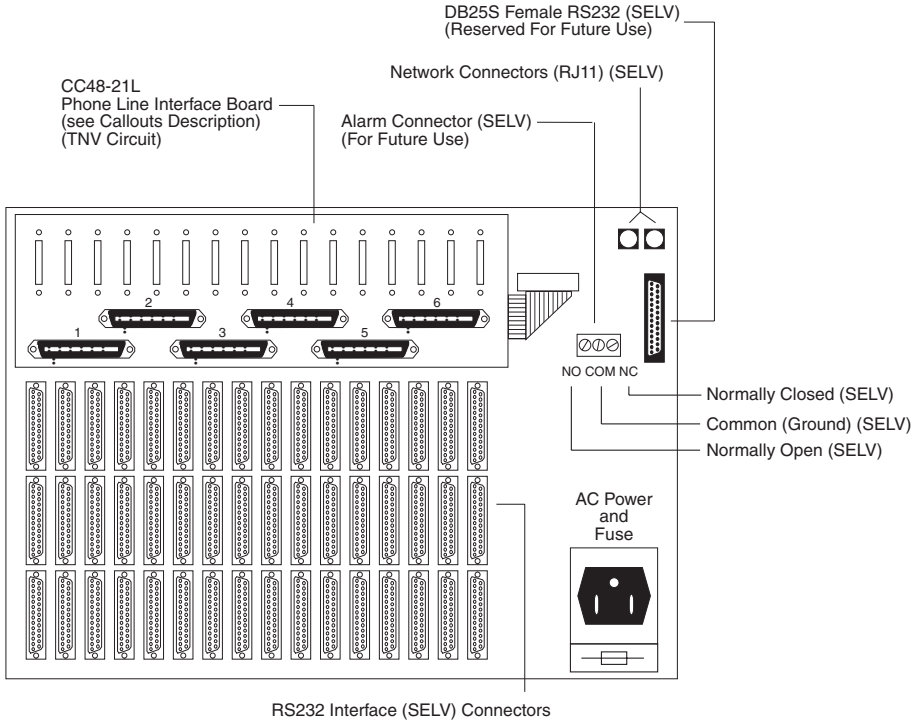


Figure 2-3. Back Panel (with CC48-21L Phone Line Interface Board)

Note: The CC4800 48 Volt Card Cage does not appear as illustrated. You will find a 3-terminal power input strip and hexagonal-shaped fuse holder instead of an AC Power outlet and fuse on the bottom right of the cage.

2.6
RJ-11 Phone Line Interface Option

The back panel shown below illustrates the RJ11 Phone Line Interface Board option (Model - CC4800-11). The RJ11 board attaches to the standard DB25 back panel connectors (refer to section 2.2) in Dial-up applications.

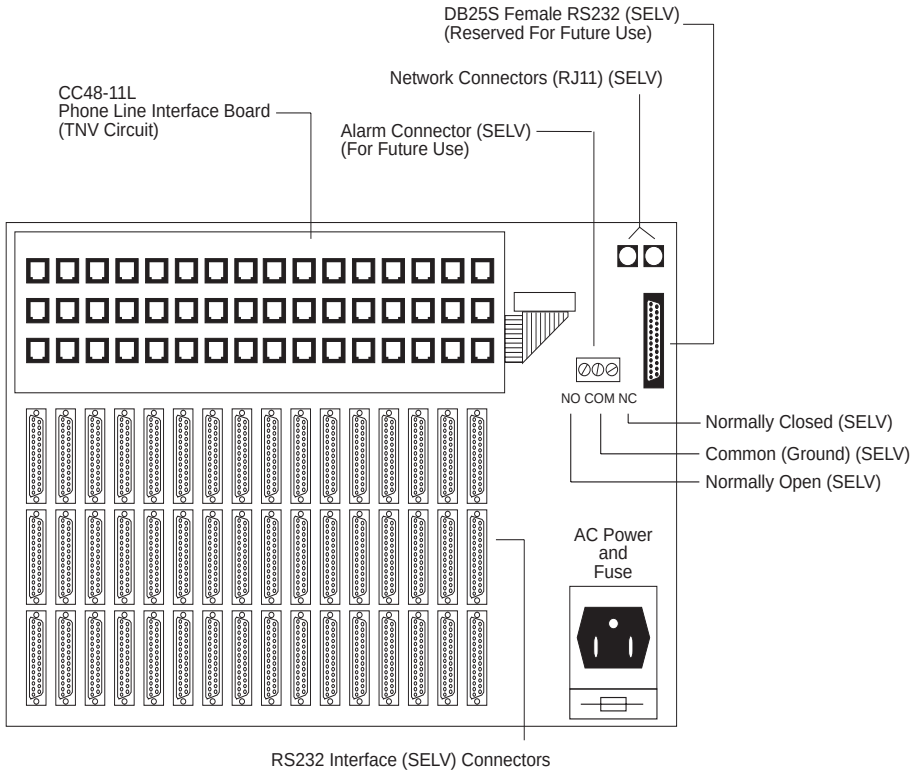


Figure 2-4. Back Panel (with CC48-11 Phone Line Interface Board)

Note: The CC4800 48 Volt Card Cage does not appear as illustrated. You will find a 3-terminal power input strip and hexagonal-shaped fuse holder instead of an AC Power outlet and fuse on the bottom right of the cage.

Chapter 3

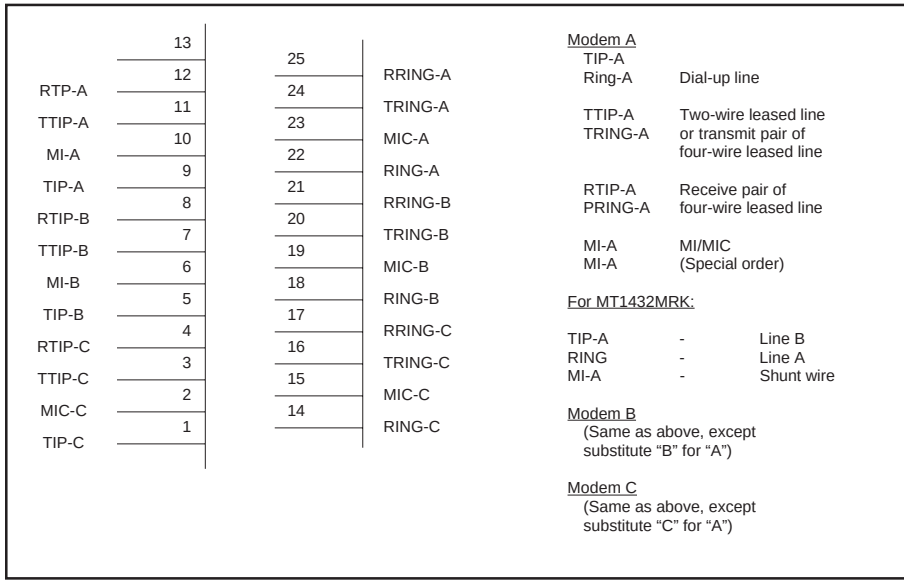
Cable and Connector Descriptions

Cable and Connector Descriptions

This chapter illustrates and describes the cables and connectors related to the **Multi**Modem**Manager** rack. These cables can be purchased from Multi-Tech Systems, any of its distributors, or from any cable manufacturer. RJ11 is readily available or may be purchased from Multi-Tech.

3.1
Standard DB25 Phone Line Interface Connector Panel

The standard back panel phone line interface provides 16 DB25 male connections. The following diagram is typical for each of the 16 phone line connectors.



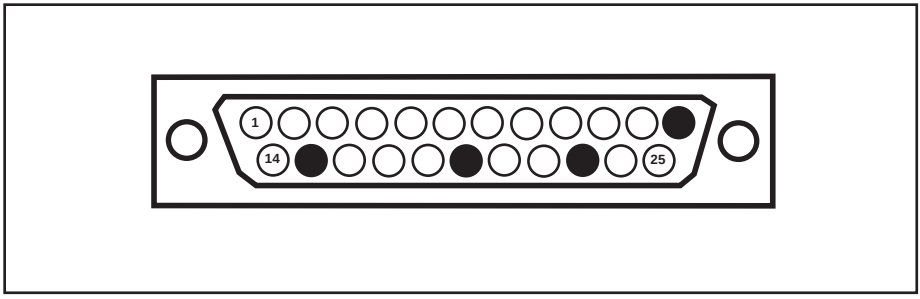
DB25-P Male Connector

The connector on the back of the rack; the cable connector is female.

We offer the CA 1432MR cable to meet these requirements. Please see the following page for full information.

3.2
CA1432MR Line Cable

Multi-Tech provides a standard line cable for connecting the MT1432MR or the MT 2834MR back panel phone line interface to the PSTN and/or leased lines. The DB25 (female) line cable and connector information is shown below.

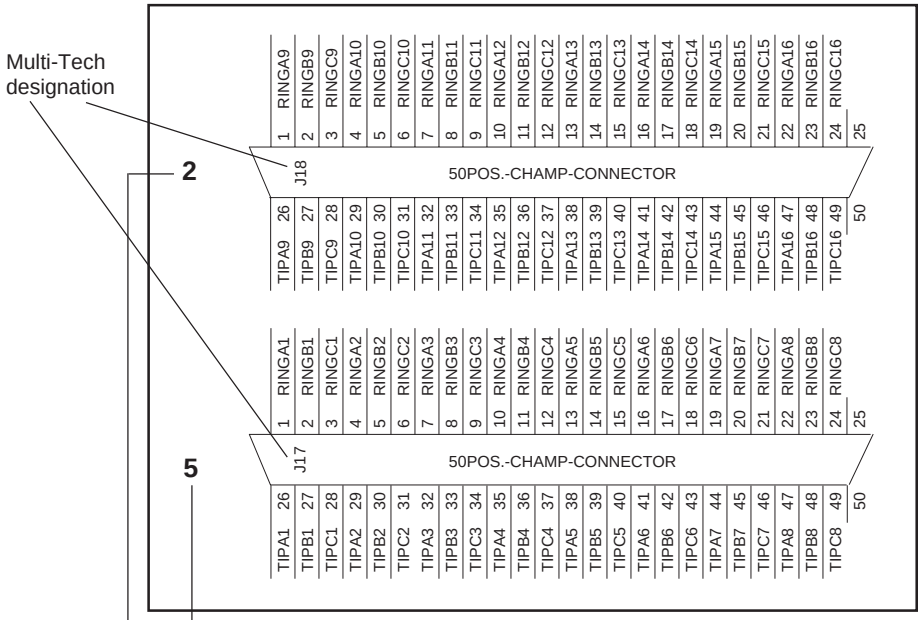


CA1432MR Line Cable - DB25 Female Connector (Rear View)
(All Pins Connected Except 13, 15, 19, and 23)

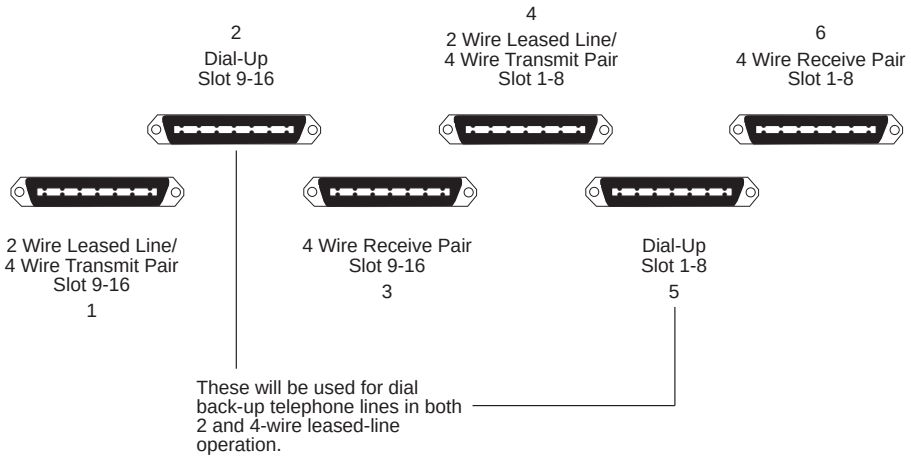
1- ORG/BLK
2- BLK/ORG
3- WHT/BLUE
4- BLUE/WHT
5- WHT/GRN
6- GRN/WHT
7- ORG/RED
8- RED/ORG
9- GRAY/RED
10- RED/GRAY
11- WHT/ORG
12- ORG/WHT
14- BLUE/BLK
16- BLK/BLUE
17- RED/GRN
18- GRN/RED
20- BLUE/RED
21- RED/BLUE
22- WHT/BRN
24- WHT/GRAY
25- GRAY/WHT

3.3
Dial-Up Line 50-Pin Connector (CC48-21L)

These 50-pin RJ21 connectors are used on racks with an RJ21 Dial-up Phone Line Interface Board. We provide this interface board to facilitate RJ21 hook-up by your local telephone company.

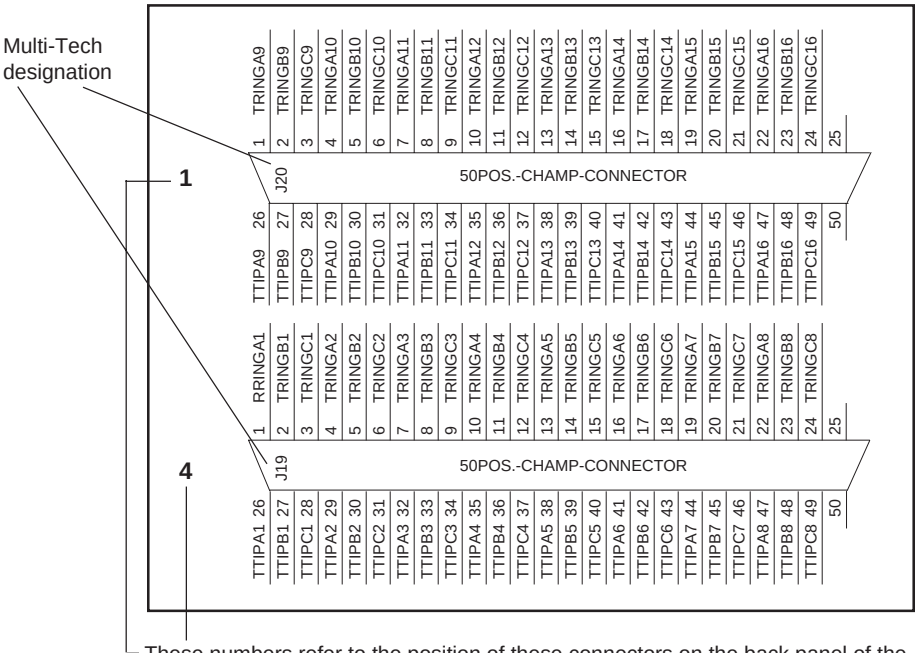


These numbers refer to the position of these connectors on the back panel of the rack as shown in Figure 2-3.



3.4 2-Wire Leased Line or 4-Wire Transmit Pair Connector (CC48-21L)

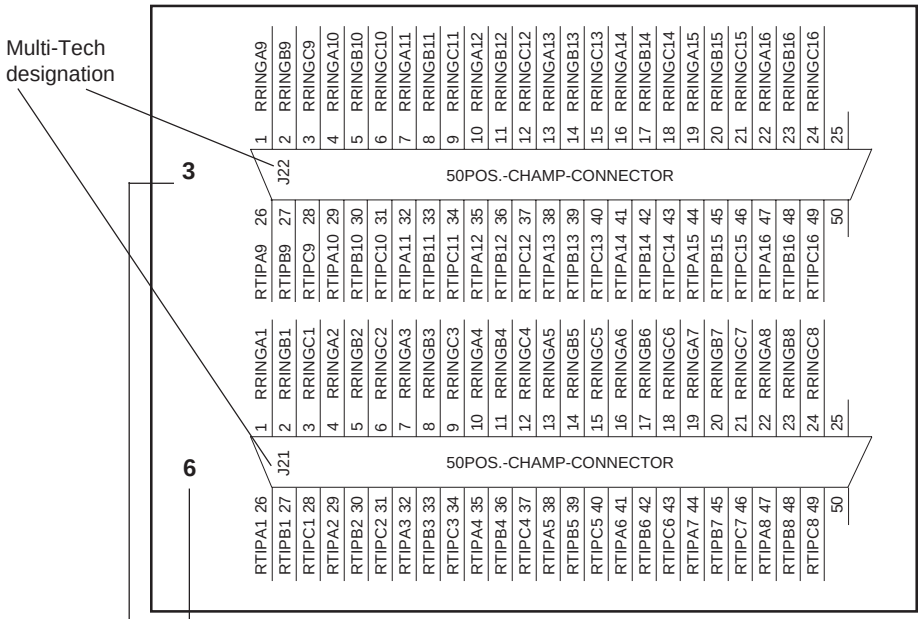
These 50-pin connectors are used on racks with an RJ21 Leased Line Phone Line Interface Board to simplify local telephone company installation.



These numbers refer to the position of these connectors on the back panel of the rack as shown in Figure 2-3.

3.5
4-Wire Receive Pair (CC48-21L)

These 50-pin connectors are used on racks with an RJ21 Leased Line Phone Line Interface Board to simplify local telephone company installation.



These numbers refer to the position of these connectors on the back panel of the rack as shown in Figure 2-3.

Chapter 4
Service, Warranty & Tech Support

4.1
Service

If service is required, equipment may be sent, freight prepaid, to our factory. Return shipping charges will be paid by Multi-Tech Systems. Include a description of the problem, a return shipping address, and a check or purchase order for out-of-warranty repairs. The standard repair charge for a MultiModemManager Rack is $395, $95 for a Power Supply, and $95 for a Rack Controller Card. These prices are valid at the time of this publication, but could change in the future. Multi-Tech pays the return freight. Send equipment to this address:

MULTI-TECH SYSTEMS, INC.
2205 Woodale Drive
Mounds View, Minnesota 55112
Attn: Service

You should check with the people that supplied you with your equipment on the availability of local service and/or loaner units, in your part of the country. You may call us at 1-800-328-9717; or if in Minnesota, at 763-785-3500.

4.2
Limited Warranty

Multi-Tech Systems, Inc. (MTS) warrants that its products will be free from defects in material or workmanship for a period of five years from the date of purchase, or if the date of purchase is not provided, five years from the date of shipment. MTS MAKES NO OTHER WARRANTY, EXPRESSED OR IMPLIED, AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED.

This warranty does not apply to any products which have been damaged by lightning storms, water, or power surges or which have been neglected, altered, abused, used for purposes other than the one for which they were manufactured, repaired by the customer, or any party without MTS's written authorization, or used in any manner inconsistent with MTS's instructions.

MTS's entire obligation under this warranty shall be limited (at MTS's option) to repair or replacement of any products which prove to be defective within the warranty period, or, at MTS's option, issuance of a refund of the purchase price. Defective products must be returned by Customer to MTS's factory transportation prepaid.

MTS WILL NOT BE LIABLE FOR CONSEQUENTIAL DAMAGES AND UNDER NO CIRCUMSTANCES WILL ITS LIABILITY EXCEED THE PURCHASE PRICE FOR DEFECTIVE PRODUCTS.

4.3
Tech Support

Multi-Tech has an excellent staff of tech support personnel available to help you get the most out of your Multi-Tech products. If you have any questions about the operation of this unit, please call Tech Support at 1-800-972-2439 (U.S. and Canada only).

Please note the status of your modem before calling Tech Support. This status can include LED indicators, screen messages, diagnostic test results, problems with a specific application, etc. Product serial numbers are also helpful in troubleshooting problems.

Appendix

Appendix A
Related Products and Documentation

MultiModemManager Products

MMM-Starter	Starter Rack includes either (must specify) a CC4800/11 (phone connections through 48-RJ11 connectors, 6-pin modular) or CC4800/21 (phone connections through 6 RJ21 connectors, 50-pin amphenol) card cage, MR4800 controller module, one PS4800 power supply, AN301TP8 NIC and MMM software.
MMM-Starter/PS	Starter Rack includes either (must specify) a CC4800/11 (phone connections through 48 - RJ11 connectors, 6-pin modular) or CC4800/21 (phone connections through 6 - RJ21 connectors, 50-pin amphenol) card cage, MR4800 controller module, one PS4800 power supply, AN301TPPS NIC and MMM software.
MT1432MR	MMM modem card contains three independent V.32bis modems. Each is a 14,400/12,000/9600/7200/4800/2400/1200/300 bps intelligent auto-answer modem for dial-up or 2-wire leased line, or 4-wire leased line with dial backup. Their features include: phone number storage; auto-fallback from 14,400 to 4800 bps, auto-switching between all speeds, callback security; 11 LEDs; remote configuration; standards compatibility with V.32bis, V.32, V.22bis, V.22, V.23, V.21, Bell 212A, Bell 103, MNP® 2-4 and V.42 error correction; MNP®5 and V.42 bis data compression.
MT2834MR	Supports 1432MR features, as above, and V.34 (28.8K bps) standard.
PS4800/-48V	Switching power supply module. A second PS4800 provides a CC4800 card cage with redundant power supply capability.
PS4800	Universal switching power supply module. A second PS4800 provides a CC4800 card cage with redundant power supply capability.

MR4800	Rack controller module provides the interface between the rack modems and a PC equipped with AN301TP8 and MMM software.
MMMSW	MMM software, runs under Windows© 3.1x, 95, or NT. The software features point and click modem configuration, testing, reset, fault alerts, and callback security. Includes AN301TP8 NIC to connect central management PC to the MR4800 rack controller.
AN508TP	Eight-port hub used when 4 or more MMM racks are to be connected to the central management PC.
AN516TP	Sixteen-port hub used when 4 or more MMM racks are to be connected to the central management PC.

MultiModemManager Manuals

- MultiModemManager Model PS4800 Power Supply Installation Manual

  documents the installation of the PS4800 power supply.

- MultiModemManager Owner's Manual

  documents hardware features and installation, and is the complete reference manual for the MultiModemManager software.

- MultiModemManager Model MR4800 Rack Controller Installation Manual

  documents the installation of the MR4800 Rack Controller.

- MultiModem (Model MT1432MR, MT1432MRI, and MT1432MRK) Owner's Manual

  documents the features and operation of the MT1432MR modem card.

- MultiModem (Model MT2834MR, MT2834MRI, and MT2834MRK) Owner's Manual

  documents the features and operation of the MT2834MR modem card.